

REMARKS/ARGUMENTS

Claims 1-31 are pending. Claims 1-31 have been rejected. Claims 1, 2 and 16 have been amended. The amendment of these claims is supported at page 7, lines 5-10. New Claims 32-36 have been added. Support for the new Claims 32-36 is on page 7, lines 6-13.

SUMMARY OF EXAMINER INITIATED INTERVIEW

As per an interview on 1 March 2004, Applicant's attorney, Kevin Nilsen, spoke with Examiner M. Alexandra Elve regarding this application as follows. There appears to be two applications and declarations in Examiner Elve's file. Examiner Elve requested clarification as to which application was the correct application. From the discussion, it was clear, that the file somehow included an application and declaration, which already issued into either U.S. Pat No. 6,596,665 or 6,306,335. Applicants' attorney specified the proper application in the interview. To memorialize this, Applicants' attorney has submitted herewith a copy of the specified application. Included in the copy of the application are the formal drawings of the application specified. In addition, a substitute declaration has been submitted herewith as requested by the Examiner.

THE §112 REJECTION

Claims 1-31 have been rejected under 35 U.S.C §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicants regard as the invention. Applicants respectfully disagree and respond as follows.

The Office Action states, "[t]he use of a non-standard, such as a software program is viewed as indefinite, because these programs may change over time, much the same as using a trademark in a claim. Consequently, the use of a non-standard, that is a software variable is deemed indefinite."

Applicants agree that if the box counting dimension was solely predicated on using the cited software program, the claim would be indefinite. This, however, is not the case. The use of the cited software is permissive, "[i]n analyzing the surface by the box counting method, commercially available image analysis software *may be used such as . . .*" (page 6, lines 22-24, emphasis added). Thus, the box counting method may use any appropriate software that analyzes surfaces using the box counting method, which is well

known in the art and can be done with or without software as described by the specification citing a basic fractal geometry text. (page 6, lines 4-6). Since the box counting method is (1) a well known and established technique for determining the fractal nature of surfaces, (2) such determination is well within the skill of one of ordinary skill in the art and (3) the software cited is merely exemplary of applicable software for determining the fractal box counting dimension, Claims 1-31 are definite.

THE §102(b) REJECTION

Claims 1, 2 and 4-22 have been rejected under 35 U.S.C. §102(b) as being anticipated by Guile et al., U.S. Pat. No. 5,716,899 (Guile herein). Applicants respectfully disagree and respond as follows.

Applicants' invention, as amended in Claims 1, 2 and 16, is a catalytic device that is comprised of a ceramic support of fused ceramic grains and a catalyst in which the surface is defined by a box counting dimension. The smallest box used to determine the box counting dimension is 1 micrometer. That is, any feature of the surface on the order of 1 micrometer or smaller is disregarded and as such will not impact the box counting dimension (i.e., will render a box counting dimension of 1). As amended, Claims 1, 2 and 16 make it clear that the surface is significantly fractal in nature or if periodic a bed of nails type structure where the applicable surface feature is at least greater than 1 micrometer.

In contrast, Guile describes a bare (i.e., honeycomb without a catalyst) porous honeycomb that has pores having an average diameter of about 15 to 30 micrometers. (col. 4, lines 13-20). Guile, then, specifically describes that the pores of the bare honeycomb are filled with "active" material or in other words a catalyst. (col. 4, lines 40-45). Thus, the surface of Guile now is a surface that is either dense flat honeycomb surface or flat catalyst surface as shown in Fig. 2a. The activated carbon particles have pores on the order of 10 to 15 angstroms, which is much smaller than the lower limit of the box counting dimension. (col. 5, lines 50-56).

The catalyst particles of Guile must be smaller than the pores of the honeycomb body, otherwise they would not fill the pores. (col. 6, lines 12-14). The catalyst particles are ground and the median particle diameter after grinding is about 2-6 micrometers. (col. 6, lines 14-16). It is well known that 6 micrometer diameter monospherical particles closely packed will result in a pore diameter of less than 1 micrometer. (See page 190 of Introduction to the Principles of Ceramic Processing, James S.

Reed, Wiley Interscience, New York, NY, 1988, attached). It is also well known that continuous size distributions of particles, such as those arising from ball milling as in Guile, will pack much more efficiently (the larger "pores approaching 1 micrometer" are filled by the smaller particles). *id.* The resulting catalyst particle surface, by first principles, does not create the required surface of the present invention because the pores and features of the packed catalyst particle surface will not have features even remotely greater than 1 micrometer. Consequently, Claims 1, 2 and 4-22 are novel.

In addition, since Guile specifically teaches a surface created by filling in all of the pores with fine particles, Guile teaches away from the surface structure of Applicants invention. For this reason, Claims 1, 2 and 4-22 are non-obvious over Guile.

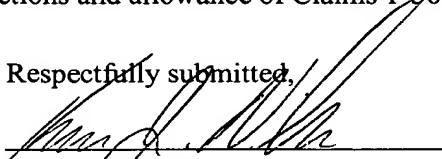
THE §103(a) REJECTION

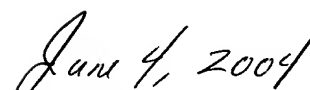
Claim 3 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Guile, as stated in the above paragraph (referring to the Office Action's 102(b) rejection), and further in view of Moyer et al., U.S. Pat. No. 5,194,154 (Moyer herein). Claims 23-31 have been rejected as being unpatentable over Guile in view of Fukui et al., U.S. Pat. No. 5,569,455.

As stated above, Guile specifically teaches to fill in the pores with fine catalyst particles, which is opposite of the surface as required in independent Claim 1, 2 and 16. Even if Guile was combined with Moyer, the mullite honeycomb would be filled with catalyst particles such that the same structure of Guile would result. That is, Guile would fill all the pores between the mullite grains making a surface not having features greater than 1 micrometer and as such would not create the present invention. Consequently, Guile, in view of Moyer, fails to make the invention and as such teaches away from the invention as required in amended Claims 1, 2 and 16. For this reason Claims 1, 2, and 16 and Claims dependent therefrom are non-obvious over Guile in view of Moyer.

Considering the foregoing reasons, Claims 1-36 are patentable. Applicants, therefore, respectfully request withdrawal of all rejections and allowance of Claims 1-36.

Respectfully submitted,


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